



ATTORNEY'S DOCKET ZU-392  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: )  
TOKITA; SAITO ) Group Art Unit: 1733  
Serial No. 09/601,893 ) Examiner: John L. Goff II  
Filed: August 9, 2000 )

For: **RESIN DISPERSION, METHOD OF PREPARING THE SAME,  
RESIN-COATED METAL SHEET OBTAINED WITH THE SAME,  
AND PROCESS FOR PRODUCING LAMINATE**

Appendix A

Please amend the following claims as indicated according to the revision to 37 C.F.R. § 1.121 concerning a manner for making claim amendments.

1. (Currently amended) A resin dispersion comprising solid particles of a graft modified ethylene/ $\alpha$ -olefin random copolymer dispersed in an organic solvent, wherein the graft modified ethylene/ $\alpha$ -olefin random copolymer has the following properties:

~~(a)~~ the copolymer contains components derived from ethylene and an  $\alpha$ -olefin of 6 to 20 carbon atoms, the content of the ethylene component is in the range of 75 to 97% by mol, and the content of the  $\alpha$ -olefin component is in the range of 3 to 25% by mol, each content being based on 100% by mol of the total of both components,

~~(b)~~ the intrinsic viscosity ( $\eta$ ) as measured in decalin at 135°C is in the range of 0.2 to 5.0 dl/g,

~~(c)~~ the crystallinity as measured by X-ray diffractometry is less than 30%, ~~and~~

~~(d)~~ the copolymer contains a graft component derived from a polar monomer, and the content of the polar monomer graft component is in the range of 0.1 to 15% by weight and

the particles of the copolymer have particle diameters measured by a Coulter Counter of 1 to 50  $\mu$ m.

2. (Currently amended) The resin dispersion as claimed in claim 1, wherein the graft modified ethylene/ $\alpha$ -olefin random copolymer further ~~has a glass transition temperature ( $T_g$ ) of not higher than -40°C and a molecular weight distribution ( $M_w/M_n$ ) measured by GPC of not more than 3~~ has the following properties:

the glass transition temperature ( $T_g$ ) is not higher than -40°C,

the crystallinity as measured by X-ray diffractometry is less than 30%, and

the molecular weight distribution ( $M_w/M_n$ ) as measured by GPC is not more than 3.

3. (Currently Amended) The resin dispersion as claimed in claim 2, wherein the graft modified ethylene/ $\alpha$ -olefin random copolymer further has the following properties:

~~(f)~~ the B value as calculated from the following equation is in the range of 1.0 to 1.4:

$$B \text{ value} = POE / (2PO \cdot PE)$$

wherein POE, 2PO and PE are each a parameter determined from the  $^{13}\text{C}$ -NMR spectrum, PE and PO are a molar fraction of ethylene and a molar fraction of the  $\alpha$ -olefin, respectively, to the total number of moles of the ethylene component and the  $\alpha$ -olefin contained in the modified ethylene/ $\alpha$ -olefin random copolymer, and POE is a proportion of the number of ethylene/ $\alpha$ -olefin alternating sequences to the number of all dyad sequences.

4. (Cancelled)

5. (Original) The resin dispersion as claimed in claim 1, wherein the solid concentration of the resin dispersion is in the range of 3 to 50% by weight.

6. (Original) The resin dispersion as claimed in claim 1, wherein the ethylene/ $\alpha$ -olefin random copolymer has been prepared by the use of metallocene catalyst.

7. (Currently amended) A process for preparing a resin dispersion, comprising grafting a polar monomer on an unmodified ethylene/ $\alpha$ -olefin random copolymer having the following properties:

~~(a')~~ the copolymer contains components derived from ethylene and an  $\alpha$ -olefin of 6 to 20 carbon atoms, the content of the ethylene component is in the range of 75 to 97% by mol, and the content of the  $\alpha$ -olefin component is in the range of 3 to 25% by mol, each content being based on 100% by mol of the total of both components,

~~(b')~~ the intrinsic viscosity ( $\eta$ ) as measured in decalin at 135°C is in the range of 0.2 to 5.0 dl/g, and

~~(c')~~ the crystallinity as measured by X-ray diffractometry is less than 30%,

to prepare a graft modified ethylene/ $\alpha$ -olefin random copolymer containing 0.1 to 15% by weight of a graft component derived from the polar monomer and having particle diameter measured by a Coulter Counter of 1 to 50  $\mu$ m, and then dispersing solid particles of the graft modified copolymer in an organic solvent.

8. (Currently amended) The process for preparing a resin dispersion as claimed in claim 7, wherein the unmodified ethylene/ $\alpha$ -olefin random copolymer further has ~~a glass transition temperature ( $T_g$ ) of not higher than 40°C and a molecular weight~~

~~distribution (Mw/Mn) measured by GPC of not more than 3~~ further has the following properties:

the glass transition temperature (Tg) is not higher than -40°C,

the crystallinity as measured by X-ray diffractometry is less than 30%, and

the molecular weight distribution (Mw/Mn) as measured by GPC is not more than 3.

9. (Currently Amended) The process for preparing a resin dispersion as claimed in claim 8, wherein the unmodified ethylene/ $\alpha$ -olefin random copolymer further has the following properties:

~~(f')~~ the B value as calculated from the following equation is in the range of 1.0 to 1.4:

$$B \text{ value} = \text{POE} / (2\text{PO} \cdot \text{PE})$$

wherein POE, 2PO and PE are each a parameter determined from the  $^{13}\text{C}$ -NMR spectrum, PE and PO are a molar fraction of ethylene and a molar fraction of the  $\alpha$ -olefin, respectively, to the total number of moles of the ethylene component and the  $\alpha$ -olefin contained in the modified ethylene/ $\alpha$ -olefin random copolymer, and POE is a proportion of the number of ethylene/ $\alpha$ -olefin alternating sequences to the number of all dyad sequences.

10. (Currently Amended) The process for preparing a resin dispersion as claimed in claim 9, wherein the unmodified ethylene/ $\alpha$ -olefin random copolymer is a linear ethylene/ $\alpha$ -olefin random copolymer having the following properties:

~~(g')~~ the ratio  $(g\eta^* = (\eta)/(\eta)_{\text{blank}})$  of the intrinsic viscosity  $(\eta)$  measured as ~~the property (b')~~ to the intrinsic viscosity  $(\eta)$  blank of a linear ethylene/propylene copolymer having the same weight-average molecular weight ~~+ by light scattering method +~~ as that of the unmodified ethylene/ $\alpha$ -olefin random copolymer and having an ethylene content of 70% by mol is a value exceeding 0.95.

11. (Currently Amended) The process for preparing a resin dispersion as claimed in claim 7, wherein the resin dispersion comprises a 0.1 to 15% by weight of polar monomer grafted to an unmodified ethylene/ $\alpha$ -olefin random copolymer having the following properties:

~~(a')~~ the copolymer contains components derived from ethylene and an  $\alpha$ -olefin of 6 to 20 carbon atoms, the content of the ethylene component is in the range of 75 to 97% by mol, and the content of the  $\alpha$ -olefin component is in the range of 3 to 25% by mol, each content being based on 100% by mol of the total of both components,

~~(b')~~ the intrinsic viscosity ( $\eta$ ) as measured in decalin at 135°C is in the range of 0.2 to 5.0 dl/g, and

~~(c')~~ the crystallinity as measured by X-ray diffractometry is less than 30%,

and then dispersing solid particles of the graft modified copolymer in an organic solvent.

12. (Original) A process for producing a resin-coated metal plate, comprising applying the resin dispersion of claim 1 to a metal plate to form a coating film.

13. (Original) The process for producing a resin-coated metal plate as claimed in claim 12, wherein a finish coating is applied to the coating film to form a finish layer.

14. (Original) A process for producing a laminate, comprising applying the resin dispersion of claim 1 to a metal plate to form an adhesive layer and laminating a polyolefin sheet or film on the metal plate by means of the adhesive layer.

15. (Previously presented) The resin dispersion as claimed in claim 1, wherein the polar monomer is maleic anhydride.

16. (Previously presented) The process for preparing a resin dispersion as claimed in claim 7, wherein the polar monomer is maleic anhydride.